



BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Sterling

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004



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* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(*Gyrinophilus porphyriticus*)
Species of Special Concern



Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.



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Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
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Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - * Field guides
 - * Natural Heritage Atlas, and more!



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BioMap: Species and Natural Communities

Sterling

Core Habitat BM590

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Alluvial Red Maple Swamp		Vulnerable
High-Terrace Floodplain Forest		Imperiled
Low-Energy Riverbank		Secure
Pitch Pine - Scrub Oak Community		Imperiled

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Cat-Tail Sedge	<i>Carex typhina</i>	Threatened
Climbing Fern	<i>Lygodium palmatum</i>	Special Concern
Houghton's Flatsedge	<i>Cyperus houghtonii</i>	Endangered
Ovate Spike-Sedge	<i>Eleocharis ovata</i>	Endangered
Philadelphia Panic-Grass	<i>Panicum philadelphicum</i>	Special Concern

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blueberry Sallow	<i>Apharetra dentata</i>	-----
Pine Barrens Itame	<i>Itame sp. 1 near inextricata</i>	Special Concern
Pine Barrens Zanclognatha	<i>Zanclognatha martha</i>	Threatened
Pink Sallow	<i>Psectraglaea carnosa</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
American Bittern	<i>Botaurus lentiginosus</i>	Endangered
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Special Concern
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Threatened



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BioMap: Species and Natural Communities

Sterling

King Rail	<i>Rallus elegans</i>	Threatened
Least Bittern	<i>Ixobrychus exilis</i>	Endangered
Pied-Billed Grebe	<i>Podilymbus podiceps</i>	Endangered
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern
Upland Sandpiper	<i>Bartramia longicauda</i>	Endangered
Vesper Sparrow	<i>Poocetes gramineus</i>	Threatened
Water Shrew	<i>Sorex palustris</i>	Special Concern
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern

Core Habitat BM611

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Shrub Swamp		Secure
White Pine - Oak Forest		Secure

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bayard's Green Adder's-Mouth	<i>Malaxis bayardii</i>	Endangered

Core Habitat BM625

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Level Bog		Vulnerable

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Dwarf Mistletoe	<i>Arceuthobium pusillum</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern



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BioMap: Species and Natural Communities

Sterling

Wood Turtle

Clemmys insculpta

Special Concern

Core Habitat BM638

Natural Communities

Common Name

Scientific Name

Status

Acidic Shrub Fen

Vulnerable

Core Habitat BM710

Vertebrates

Common Name

Scientific Name

Status

Bald Eagle

Haliaeetus leucocephalus

Endangered

Common Loon

Gavia immer

Special Concern



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BioMap: Core Habitat Summaries

Sterling

Core Habitat BM590

This large Core Habitat, anchored by the Nashua River, supports one of the most diverse assemblages of rare vertebrate animals in the state. In particular, it contains the largest known population of Blanding's Turtles remaining in Massachusetts and, perhaps, in New England. Several high-quality natural communities are found along the Nashua River, and habitat diversity within the Core Habitat supports an array of native species. For example, grasslands support Grasshopper Sparrows, wetland habitats support rare plant species, and upland habitats, such as heathlands and Pitch Pine-Scrub Oak barrens, support a variety of rare moth species. Parts of this Core Habitat are under conservation ownership, and protecting the remaining areas would provide connectivity between existing conservation land, creating a large and relatively unfragmented reserve for this Core Habitat's biodiversity.

Natural Communities

This Core Habitat contains an extensive area of high-quality Low-Energy Riverbank along the Nashua River. Low-Energy Riverbanks are open herbaceous communities occurring on sandy or silty mineral soils of river and streambanks that do not experience severe flooding or ice scour. Here the community contains good species and habitat diversity, including riparian woodlands and gravel bars. An excellent Alluvial Red Maple Swamp also occurs along the Nashua River in this Core Habitat. Alluvial Red Maple Swamps are a type of Red Maple Swamp that occurs in low areas along rivers and streams. Regular flooding enriches the soil with nutrients, resulting in an unusual set of associated trees and plants. Upland communities in this Core Habitat include a small Pitch Pine-Scrub Oak community of high quality.

Plants

Several scattered populations of the Cat-Tail Sedge, which has a thick terminal spike resembling that of cattails, are found in wetland areas of this Core Habitat. Two other rare members of the sedge family are found in this Core Habitat: the Endangered Ovate Spike-Sedge, and the Endangered Houghton's Flatsedge.

Invertebrates

This Core Habitat includes Pitch Pine - Scrub Oak barrens inhabited by rare moths such as the Pine Barrens Itame and the Pine Barrens Zanclognatha, as well as heathland habitat for the Pink Sallow moth and the Blueberry Sallow moth. It is likely that this Core Habitat is inhabited by other rare invertebrates, for example, the Slender Clearwing Sphinx moth.



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BioMap: Core Habitat Summaries

Sterling

Vertebrates

Within this Core Habitat, the Nashua River and adjacent wetlands and uplands support the largest known population of Blanding's Turtles remaining in Massachusetts and, perhaps, in New England. Vernal pools, forested wetlands, and adjacent upland forests provide significant habitat for Spotted Turtles and Blue-spotted Salamanders, while dry upland forests provide significant habitat for Eastern Box Turtles. The Nashua River and its tributaries also contain significant habitat for Wood Turtles.

The grasslands of Fort Devens within this Core Habitat support the fourth largest population of Grasshopper Sparrows in Massachusetts. Sandy, sparsely vegetated habitats associated with training areas and abandoned gravel pits adjacent to the Nashua River support small numbers of Vesper Sparrows.

Core Habitat BM611

Natural Communities

This Core Habitat contains a large, maturing White Pine-Oak Forest with good tree, shrub, and herbaceous species diversity. White Pine-Oak Forest is a common, extremely variable forest community of mixed dominance with Oaks and White Pine in the canopy. In Massachusetts, it is often a common stage of forest succession, developing from White Pine forests. Here this community is of good quality and is embedded within a large naturally forested, roadless area. The Core Habitat also contains a moderate-sized, relatively undisturbed Shrub Swamp with good microhabitat diversity. Shrub Swamp communities are a common and variable type of wetland occurring on seasonally or temporarily flooded soils. They are often found in the transition zone between emergent marshes and swamp forests.

Core Habitat BM625

This Core Habitat encompasses riparian habitats and adjacent uplands along several miles of the Stillwater River and its tributaries. These areas provide significant habitat for rare turtles, contain a good-quality Level Bog community, and house the unusual Dwarf Mistletoe plant growing on Black Spruce trees. Approximately half the Core Habitat is already protected as conservation land.

Natural Communities

This Core Habitat contains a Level Bog in good condition that is well-buffered by naturally forested upland. Level Bogs are dwarf shrub peatlands, generally with pronounced hummock and hollow formations. These wetland peatlands are our most acidic and nutrient-poor, because they receive little overland water input, and are not connected to the water table.

Plants

Areas of this Core Habitat support a population of the uncommon Dwarf Mistletoe, a parasitic plant that forms a "witch's broom" on Black Spruce trees.



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Sterling

Vertebrates

This Core Habitat contains over seven miles of riparian habitat along the Stillwater River that provide significant habitat for Wood Turtles. The freshwater wetlands and forested uplands along the Stillwater River and west along Ball Brook to Poutwater Pond and Governor Brook contain significant habitat for Spotted Turtles. Blanding's Turtles have also been observed in the area.

Core Habitat BM638

Natural Communities

This Core Habitat contains a small Acidic Shrub Fen with well-developed Sphagnum peat and a rich diversity of shrub species. Acidic Shrub Fens are shrub-dominated acidic peatlands found primarily along pond margins in the eastern and central part of the state. These wetland communities experience some groundwater and/or surface water inputs, but no calcareous seepage.

Core Habitat BM710

Vertebrates

The large Wachusett Reservoir and surrounding undeveloped lands provide habitat for wintering Bald Eagles and breeding Common Loons. The shores of the Wachusett Reservoir are entirely protected as state watershed protection land.



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Living Waters: Species and Habitats

Sterling

Core Habitat LW059

Plants

Common Name

Scientific Name

Status

Algae-like Pondweed

Potamogeton confervoides

Threatened

Core Habitat LW210

Invertebrates

Common Name

Scientific Name

Status

Eastern Pearlshell

Margaritifera margaritifera



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Living Waters: Core Habitat Summaries

Sterling

Core Habitat LW059

Stuart Pond, a naturally acidic water body, supports a population of the rare aquatic plant, the Algae-like Pondweed. This species is so named because of its filamentous and many-branched underwater leaves. Native freshwater plants like the Algae-like Pondweed are an important component of aquatic ecosystems, providing habitat and nutrition for fishes and invertebrates, and adding oxygen to the water through photosynthesis.

Core Habitat LW210

Four of the state's twelve freshwater mussel species are known to occur in the Stillwater River. The river supports a dense population of the Eastern Pearlshell, a species known from only 22 water bodies in Massachusetts. It inhabits streams and rivers that are cool and clean enough to support its trout fish hosts. Here the Eastern Pearlshell is found in the clear and gently flowing runs and pools, anchored in the bottom sands and gravels.



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Natural Heritage &
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